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Yoshida(10) Pub. No.: **US 2004/0009755 A1**(43) Pub. Date: **Jan. 15, 2004**(54) **ANTENNA TRANSMISSION AND
RECEPTION SYSTEM****Publication Classification**

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P.C.****11491 SUNSET HILLS ROAD
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RESTON, VA 20190 (US)**(57) **ABSTRACT**

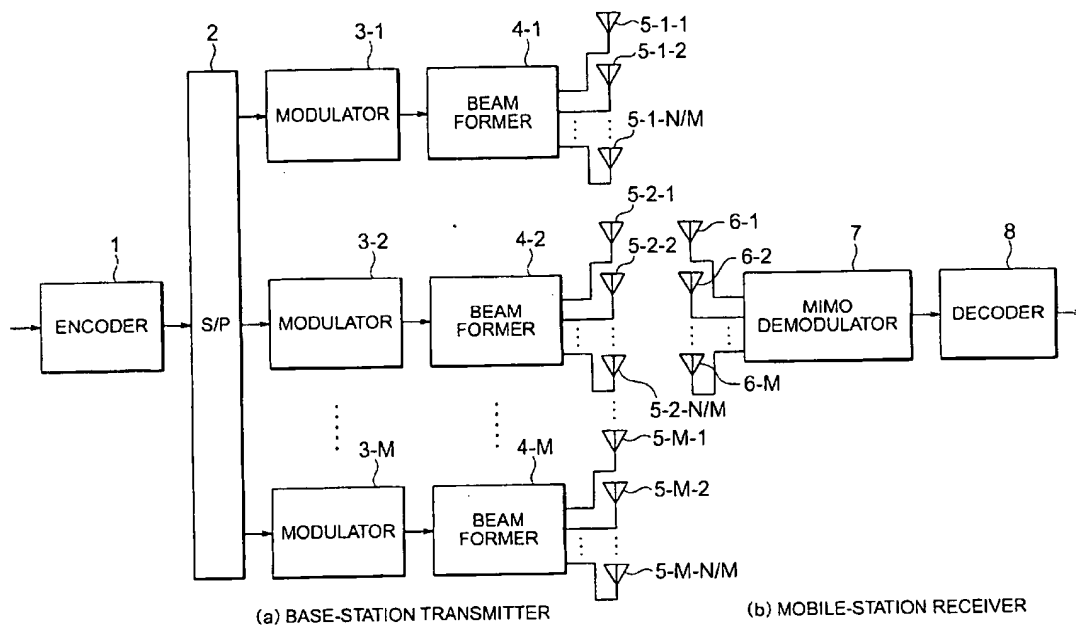
A transmitter of a base station includes a data serial-to-parallel converter, M modulators, M beam formers, and transmission antennas. The data serial-to-parallel converter converts transmission data into M sequences. Each modulator modulates the transmission data. Each beam former weights the modulation signal to form directional beams. The transmission antennas narrow the beams and transmit the modulation signals in parallel (MIMO transmission). In a mobile station, a receiver has reception antennas for receiving data transmitted in parallel and an MIMO demodulator for demodulating the data.

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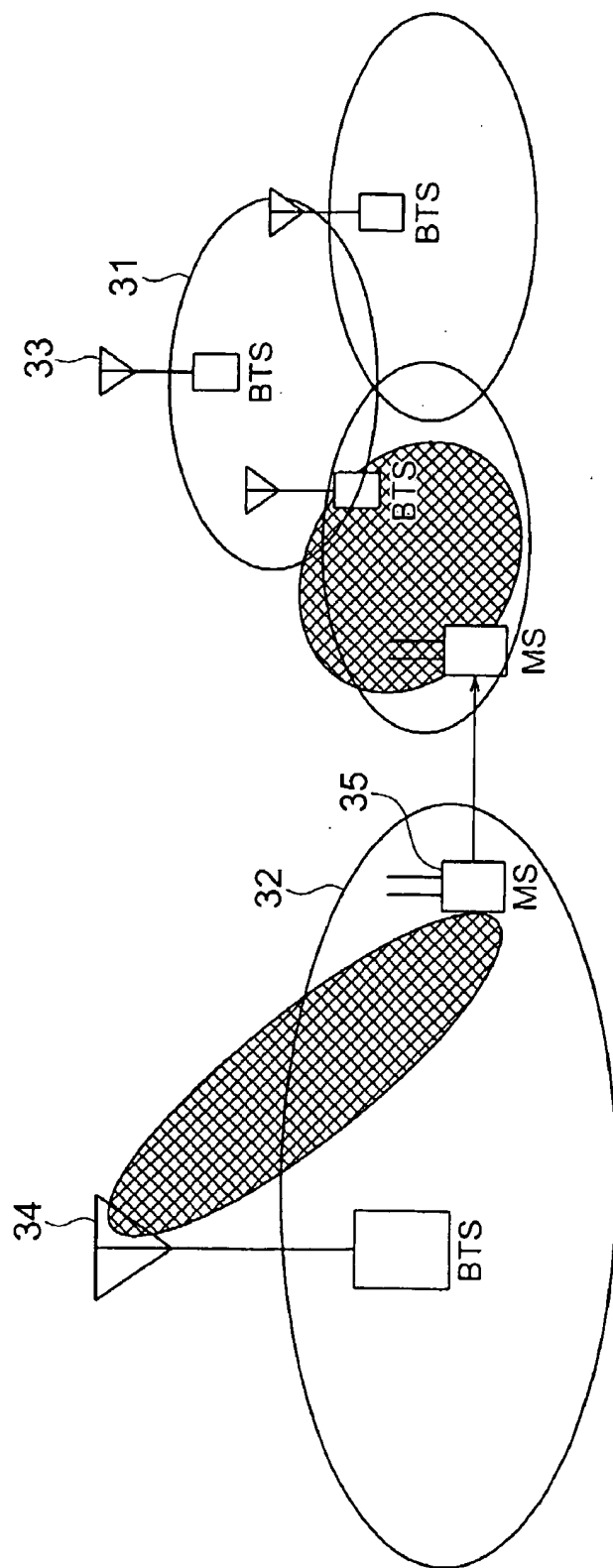


FIG. 14